The Mathematical Thinking for Instruction (MTI) course offers participants an opportunity to extend their content knowledge of mathematics, deepen their understanding of student thinking, and develop a research-based instructional approach for teaching mathematics.

**Summer MTI Registration Schedule Posted This Month!**

The tentative MTI summer course schedule was posted on the State Department of Education MTI website on Tuesday, March 15th. Registration will begin at 8:00 a.m. (7:00 a.m. PST) on Monday, April 4th.

The MTI page on the SDE website is [www.sde.idaho.gov/site/math/mti.htm](http://www.sde.idaho.gov/site/math/mti.htm).

Also, mark the calendar for April 15th when the Fall MTI schedule will be posted. Registration will then open two weeks later on Monday, May 2nd.

Please pass this information along to teachers and administrators in your district that need to take the course. It is advantageous for a person to sign-up for the same class as other individuals from the same school.

Thank you!

"The work of a teacher - exhausting, complex, idiosyncratic, never twice the same - is at its heart, an intellectual and ethical enterprise. Teaching is the vocation of vocations. - William Ayres"
Addressing Misconceptions

Student difficulties in mathematics are often rooted in misconceptions about mathematics concepts and procedures. Research supports the idea of explicitly addressing these student misconceptions in the mathematics classroom as a means of correcting the misconception and building students’ mathematical understanding.

The process a teacher uses to address students’ misconceptions is extremely important. In the traditional mathematics classroom teachers often address student misconceptions by explaining how the process a student used was incorrect and then demonstrating the correct process or understanding. This approach does not meaningfully address the students prior knowledge or their misunderstanding about mathematics that led them to approach the problem in a particular way. Students often repeat the mistake after a teacher has explained how to ‘correctly’ get the answer. In order to meaningfully address student misconceptions, teachers must give students an opportunity to confront their misconception and go through the internal cognitive process of correcting the misunderstanding.

Examples/non-examples is a strategy teachers can use to facilitate the process of addressing misconceptions. Figure 1 is an example of two solutions for 251-49.

![Figure 1](image)

By placing these two examples on the board and asking students, Which solution is correct and why?, the teacher places the cognitive process of correcting the misunderstanding in the hands of the students. Time should be given for students to analyze the problem and solutions. They should be allowed to communicate with peers about which is the correct solution and why. Then whole class discussion should occur with a focus on students explaining their reasoning and justifying their answer.

(Figure 2 at left) Figure 2 is another example of using examples/non-examples to correct student misconceptions, in this case around an algebraic topic. The expression $12x$ is placed on the board and then paired examples and non-examples are given to students. Students are asked to determine which expression correctly represents $12x$ and explain why.

The practice of students actively addressing misconceptions by examining examples and non-examples allows them to meaningfully build mathematical understanding. This approach can be easily integrated into the mathematics classroom on a regular basis and will allow students to take ownership of the mathematics they are learning.
The Regional Math Specialists and Developing Mathematical Thinking (DMT) personnel, with support from the State Department of Education, are hosting three separate one day conferences across the state to facilitate conversation and assist with the implementation of ideas learned during the MTI course in an effort to help district math leaders support their teachers. Please note the date for your region below.

**Regions 1/2: Coeur d'Alene, May 6th, 9:00 a.m. - 3:30 p.m.**

*Contact:* Abe Wallin, abewallin@boisestate.edu

**Regions 3/4: Meridian, April 15th, 9:00 a.m. - 3:30 p.m.**

*Contact:* Michele Carney, michelecarney@boisestate.edu

**Regions 5/6: Idaho Falls, April 29th, 9:00 a.m. - 3:30 p.m.**

*Contact:* Karin Moscon, karinmoscon@boisestate.edu

The MTI Leadership Conferences will help teachers, math coaches, administrators and district office personnel support their teachers as they implement the MTI instructional strategies and methods. The conferences will also familiarize participants with the **Common Core Standards (CCS)** and how they tie to MTI practices, including a focus on how do unit planning around the CCS that implements the MTI approach. To get more information or to sign-up for a leadership conference in your region, please contact the individuals listed above.

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Mathematics is no more computation than typing is literature. - John Allen
Region 3 & 4 Follow Up

Workshop Availability

Title: Ratios and Proportional Reasoning (6th - 8th grade)
Description: Developing ratio and proportional reasoning is a foundational topic to the middle school curriculum and in the Common Core Standards. This workshop will focus on developing understanding of a learning progression for proportional reasoning and important considerations when selecting instructional items.

Title: Warm-Up Tasks that Build Mathematical Understanding (K-8th grade)
Description: Warm-up tasks can be used to both develop and/or remediate students understanding of number. This workshop will focus on three specific warm-up activities that can be easily implemented in the classroom and that will help build important mathematical understandings for all students.

Title: Fraction Understanding (3rd - 5th grade)
Description: Understanding of fractions is fundamental for performing operations. The workshop focuses on building the foundational ideas of unit, equivalence and comparative size of fractions through various representations.

Title: Models for Multiplication: Whole Numbers, Decimals and Percents (3rd - 6th grade)
Description: Developing iconic models for multiplication is important for building students mathematical understanding. This workshop focuses on multiple models for multiplication with whole numbers, decimals & percents.

Title: Composing/Decomposing Number (K - 6 grade)
Description: Investigates the learning progression and importance of composing and decomposing numbers from whole numbers to decimals, connecting them to the operations and how they impact students’ strategies.

Title: Number (K - 2 grade)
Description: Investigates students understanding of number and quantity, looking at how students develop number and strategies for instruction.

Title: Introducing Algebra (6 - 9 grade)
Description: This workshop examines methods for introducing algebraic concepts to students in a meaningful and conceptual way and how to move students towards more formal algebraic thinking and procedures. Topics include writing expressions, linear equations and systems of equations.

Title: Meaningful Assessment (4 - 10 grade)
Description: This workshop will examine how we assess students’ conceptual and procedural understanding of mathematics. Topics include developing and modifying pre- and post-tests to focus on conceptual understanding and utilizing rubrics to grade student work.

About MTI Workshops

Go to the MTI Follow up website for information on workshops in your area, www.tinyurl.com/mtifollowup

The MTI follow up workshops are available to districts, schools and teachers who are interested in implementing the ideas from the MTI course. A district or school can contact the Regional Math Specialist who offers the workshop to make arrangements. Workshop dates are limited. These can be done after school or during a district or school in-service time. If a school or district requests a workshop, we ask that they guarantee a minimum of 15 people will be in attendance. The majority of participants should have taken the MTI course. In addition, for all after school workshops, we will post the workshop information on our MTI follow up website. This will allow interested teachers and administrators from surrounding areas to attend the workshop as well. Thank you for your interest in providing MTI follow up support to teachers!